IN THE CLAIMS

Please cancel claims 1-26 and replace those claims with the following new claims 27-48. These new claims are set out in the following listing of the claims. This claim listing replaces and supersedes all prior listings of the claims.

1-26   (Canceled)

27.   Receiving apparatus for receiving signals in a digital telecommunication system, comprising:

receiving means for receiving a reference symbol comprising a plurality of successive repetition patterns, whereby the last repetition pattern is phase-shifted in relation to the other repetition patterns, and

synchronizing means for synchronizing the receiving apparatus in the digital telecommunication system using said received reference symbol,

said synchronizing means comprising correlation means for cross correlating the plurality of repetition patterns within a correlation window having a predetermined length, and said synchronizing means including detection means that uses the phase-shift information of said last repetition pattern in relation to the other repetition patterns in said reference symbol to detect a correlation peak which indicates the position of said last repetition pattern.

28.   Receiving apparatus for receiving signals in a digital telecommunication system according to claim 27, wherein aid phase-shifted repetition pattern is phase-shifted by 180° in relation to said other repetition patterns.

29.   Receiving apparatus for receiving signals in a digital telecommunication system according to claim 27, wherein said correlation means has a correlation window length

corresponding to the length of one repetition pattern, and an output signal of said correlation means is supplied to said detection means for detecting the correlation peak.

30.   Receiving apparatus for receiving signals in a digital telecommunication system according to claim 29, wherein said detection means comprises delay means for delaying the output signal of said correlation means by one repetition pattern length and subtraction means for subtracting the output signal of said delay means from the output signal of said correlation means.

31.   Receiving apparatus for receiving signals in a digital telecommunication system according to claim 30, further comprising averaging means for smoothing the output signal of said detection means.

32.   Receiving apparatus for receiving signals in a digital telecommunication system according to claim 27, wherein said correlation means has a correlation window length corresponding to the length of two repetition patterns for detecting the position of the correlation peak.

33.   Receiving apparatus for receiving signals in a digital telecommunication system according to claim 32, wherein said correlation means uses a positive and a negative conjugation of an expected repetition for detecting the position of said correlation peak.

34.   Receiving apparatus for receiving signals in a digital telecommunication system according to claim 27, wherein the output signal of said correlation means or of said detection means is supplied to peak threshold detection means and gap detection means, whereby said correlation peak detected by said correlation means or said detection means is confirmed or not on the basis of detection results of said peak threshold detection means and said gap detection means.

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35.   Receiving apparatus for receiving signals in a digital telecommunication system according to claim 34, wherein said peak threshold detection means detects if the output signal of the correlation means or the detection means exceeds a predetermined correlation peak threshold, and the gap detection means detects if the output signal of said correlation means or of the detection means has been below a predetermined gap threshold before said detected correlation peak.

36.   Receiving apparatus for receiving signals in a digital telecommunication system according to claim 35, further comprising delay means for delaying the output signal of said correlation means or said detection means before being supplied to said gap detection means.

37.   Receiving apparatus for receiving signals in a digital telecommunication system according to claim 35, wherein said gap detection means detects if the output signal of said correlation means or the detection means has been below said predetermined gap threshold during a predetermined gap time.

38.   A method for synchronizing a receiving apparatus in a digital telecommunication system, comprising the steps of receiving a reference symbol comprising a plurality of successive repetition patterns, whereby the last repetition pattern is phase-shifted in relation to the other repetition patterns, and synchronizing the receiving apparatus in the digital telecommunication system using said received reference symbol by cross correlating said plurality of repetition patterns within a correlation window having a predetermined length and by using the phase-shift information of said last repetition pattern in relation to the other repetition patterns in said reference symbol to detect a correlation peak which indicates the position of said last repetition pattern.

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39.   The method according to claim 38, wherein said phase-shifted repetition pattern is phase-shifted by 180° in relation to said other repetition patterns.

40.   The method according to claim 38, wherein said correlation window length corresponds to the length of one repetition pattern, and a detecting step for detecting the correlation peak is performed after the correlation step.

41.   The method according to claim 40, wherein said detecting step comprises the steps of delaying the output signal of said correlation step by one repetition pattern length, and subtracting the output signal of said delay step from the output signal of said correlation step.

42.   The method according to claim 41, further comprising the step of smoothing the output signal of said detection step.

43.   The method according to claim 38, wherein said correlation window length corresponds to the length of two repetition patterns for detecting the position of the correlation peak.

44.   The method according to claim 43, wherein said correlation step uses a positive and a negative conjugation of an expected repetition pattern for detecting the position of said correlation peak.

45.   The method according to claim 38 further comprising the steps of peak threshold detection and gap detection after said correlation step or said detection step is performed, whereby said correlation peak detected in said correlation step or said detection step is confirmed or not on the basis of the detection results of said peak threshold detection and said gap detection.

46. The method according to claim 45, wherein said peak threshold detection step detects if the output signal of the correlation step or said detection step exceeds a predetermined correlation peak threshold and said gap detection step detects if the output signal of said correlation step or of said detection step has been below a predetermined gap threshold before said detected correlation peak.

47. The method according to claim 46, further comprising the step of delaying the output signal of said correlation step or said detection step before said gap detection is performed.

48. The method according to claim 46, wherein the step of gap detection detects if the output signal of said correlation step or said detection step has been below said predetermined gap threshold during a predetermined gap time.